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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,001	01/15/2002	Giorgio Agostini	DN2001055	5492

7590 10/21/2003

The Goodyear Tire & Rubber Company
Patent & Trademark Department - D/823
1144 East Market Street
Akron, OH 44316-0001

EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/050,001	Applicant(s) AGOSTINI ET AL.	
	Examiner Katarzyna Wyrozewski Lee	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-20 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>0702</u> . | 6) <input type="checkbox"/> Other: |

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to the claim 1 of the present invention, line 30-31, the examiner is not clear as to what the applicants mean by "as the case may be".

In claim 8 the applicant discloses that the carbon black is treated to contain at least one moiety selected from silanol, siloxane, titanium dioxide, zirconium dioxide, zirconium hydroxide and aluminum hydroxide. At the same time claim 1 in the formula provided enables one of ordinary skill in the art to utilize silane-containing compound. It is not clear if the modified carbon black of the present invention has been additionally pre-treated before treatment of claim 1 or if claim 8 simply does not further narrow the independent claim.

With respect to claim 9, the examiner is not clear as to what the applicant means by methyl vinyl and propyl vinyl groups. Methyl has only one carbon atom and therefore cannot contain vinyl functionality and propyl is an alkyl that also does not contain vinyl functionality.

Claim Objections

3. Claim 1 is objected to because of the following informalities: In line 30 of the claim the applicants have misspelled term "radical". Appropriate correction is required.

With respect to the claims 2c and 5, benzoic acid peroxide is referred to as perbenzoic acid.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

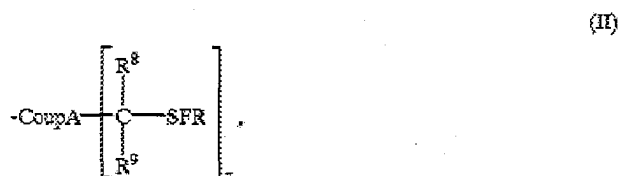
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 5, 7-11, 13, 14, 16-20 are rejected under 35 U.S.C. 102(e) as being anticipated by WHITEHOUSE (US 6,337,358).

The prior art of WHITEHOUSE discloses modified particles containing stable free radical group that is incorporated into polymerization process of diene compounds such as rubber and wherein formed composition is utilized in articles such as tires (col. 15, lines 5-10).

Art Unit: 1714

According to the Abstract of the prior art of WHITEHOUSE organic attachment to the particle can have following chemical formula:



wherein CoupA represents a Si-containing group, a Ti-containing group, a Cr-containing group or a Zr-containing group; R^8 and R^9 , which can be the same or different, represent hydrogen, an alkyl group, an aryl group, $-\text{OR}^{10}$, $-\text{NHR}^{10}$, $-\text{NR}^{10}\text{R}^{10}$, or $-\text{SR}^{10}$, wherein R^{10} represents an alkyl group or an aryl group; SFR represents a stable free radical; and n is an integer of from 1 to 3. A modified particle having an attached $-\text{SFR}$ or $-\text{X}-\text{SFR}$ is additionally disclosed. Also, modified particles with attached polymers are also disclosed as well as methods of making the modified particles.

According to the further description in specification, if the substituent is XSFR then X has vinyl functionality (col. 3, lines 55-58).

The particles utilized in the polymerization processes as disclosed in examples of WHITEHOUSE include carbon black. Specification further discloses use of silica (col. 5, line 42) as well as metal oxide treated carbon blacks. The metal oxide treated carbon black includes silica coated carbon black (col. 6, lines 54-57) as well as aluminum, titanium and zirconium (col. 6, lines 26-35).

Example of silane compound utilized in the composition of WHITEHOUSE is vinyl substituted alkoxy silyl group.

The particle modified so with coupling agent is then reacted with radical initiator. The examples of the prior art of WHITEHOUSE disclose use of t-butyl peroxide.

Art Unit: 1714

According to the examples of WHITEHOUSE, the polymerization of rubbers such as polyisoprene or SBR occurs in presence of solvent that does not interfere with the polymerization, which upon completion is terminated.

The modified carbon black of the prior art of WHITEHOUSE when utilized in tire articles as reinforcing agent it is used in amount of 1-60 wt %.

In the light of the above disclosure, the prior art of WHITEHOUSE anticipates the requirements of claims rejected above.

6. Claims 1-3, 7-11, 13, 14, 16-20 are rejected under 35 U.S.C. 102(e) as being anticipated by DEVONPORT (US 6,372,820).

The prior art of WHITEHOUSE discloses modified particles containing stable free radical group that is incorporated into polymerization process of diene compounds such as rubber and wherein formed composition is utilized in articles such as tires (col. 14, lines 25-29).

According to col. 2 of the prior art of DEVENPORT, the particles are modified according to the following formulas:



or



or



wherein CoupA represents a Si-containing group, a Ti-containing group, a Cr-containing group, or a Zr-containing group; A is defined above; M is defined above; X is defined above; and n is an integer of from 1 to 3.

Art Unit: 1714

The particles utilized in the polymerization processes as disclosed in examples of DEVENPORT include carbon black. Specification further discloses use of silica (col. 4, line 32) as well as metal oxide treated carbon blacks. The metal oxide treated carbon black includes silica coated carbon black as well as aluminum, titanium and zirconium (col. 5, lines 7-25).

The carbon filler is first reacted with coupling agent, wherein coupling agents including vinyl-substituted agents (col. 9, line 49) include also Si-69.

Particle treated with coupling agent is then subjected to reaction with metal containing compound, wherein for anionic type polymerizations, this compounds are organolithium compounds (col. 16, lines 23-27). Examples disclose use of n-butyl lithium.

Modified particle is then incorporated into polymerization medium of the diene-based polymers (col. 13, lines 30-38) in a solvent that does not interfere with polymerization process (col. 10, lines 13-17) and upon completion the polymerization is terminated by lowering or raising temperature (col. 10, lines 44-51). The amount of the modified particles in tire compositions is in a range of 1-60 wt % (col. 14, lines 31-35).

In the light of the above disclosure the prior art of DEVENPORT anticipates the requirements of claims rejected above.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1714

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 6, 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over either WHITEHOUSE (US 6,337,358) or DEVONPORT (US 6,372,820) either one of which in view of YATSUYANAGI (US 6,518,367).

The discussion of the disclosure of the prior art of either WHITEHOUSE or DEVONPORT from paragraph 5 or 6 of this office action is incorporated here by reference.

Art Unit: 1714

The difference between the present invention and the disclosure of either prior art of WHITEHOUSE or DEVONPORT is recitation of different coupling agents that are as the prior art of WHITEHOUSE or DEVONPORT disclosed vinyl substituted coupling agents.

With respect to the above difference, the prior art of YATSUYANAGI discloses rubber composition that comprises carbon black reinforcing filler.

The coupling agents that are utilized in order to improve the adhesion properties between rubber and filler such as carbon black and silica include vinyl substituted trimethoxy silanes such as methacryloxypropyl trimethoxy silane, methacryloxypropyl triethoxy silane, methacryloxy propylmethyl dimethoxysilane and the like (col. 19, lines 15-25).

Use of the coupling agents of YATSUYANAGI will result in increased adhesion between reinforcing filler and rubber matrix. Using any functional equivalent containing vinyl group and alkoxy group will have the same effect, since they would all be functional equivalents.

In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the coupling agents of YATSUYANAGI in the process of either WHITEHOUSE or DEVONPORT and thereby obtain the claimed invention. Using coupling agents of YATSUYANAGI would have been obvious for following reasons: 1) the prior art of either WHITEHOUSE or DEVONPORT teach use of vinyl substituted alkoxysilanes as coupling agents and 2) these compounds are utilized in known rubber composition for the same purpose, which is adhesion promotion.

Allowable Subject Matter

11. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record found during search did not result in any disclosures which would utilize tetramethylene ethylenediamine as radical initiator utilized to react with particulate carbon black or silica.

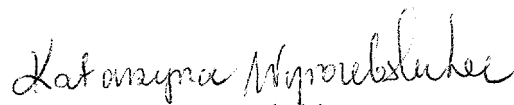
Additional prior art found but now applied are US 6,368,239 and US 6,551,393 both to DEVONPORT. The disclosures of these two prior arts are the same as the US 6,372,820 applied against present claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 1714

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A handwritten signature in cursive script, appearing to read "Katarzyna Wyrozebski Lee".

Katarzyna Wyrozebski Lee
Primary Examiner
Art Unit 1714

October 14, 2003